

ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

Stylesheet Version v18.0

Title of Invention	Method and apparatus for considering diagonal wiring in placement						
<p>Application Number: 09/731891 *09/731891*</p> <p>Confirmation Number: 1036</p> <p>First Named Applicant: Steven Teig</p> <p>Attorney Docket Number: SPLX.P0002</p> <p>Art Unit: 2825</p> <p>Examiner: Thuan V. Do</p> <p>Search string: (4777606 or 5224057 or 5519836 or 5699265 or 6038385 or 6085032 or 6088519 or 6154874 or 6240541 or 6349403 or 6366279 or 6442745 or 6505331 or 6601227 or 20030014725 or 20040044979).pn.</p>							
US Patent Documents							
Note: Applicant is not required to submit a paper copy of cited US Patent Documents							
Init	Cite.No.	Patent No.	Date	Patentee	Kind	Class	Subclass
TD	1	4777606	1988-10-11	Fournier			
TD	2	5224057	1993-06-29	Igarashi et al.			
TD	3	5519836	1996-05-21	Gawlick et al.			
TD	4	5699265	1997-12-16	Scepanovic et al.			
TD	5	6038385	2000-03-14	Scepanovic et al.			
TD	6	6085032	2000-07-04	Scepanovic et al.			
TD	7	6088519	2000-07-11	Koford			
TD	8	6154874	2000-11-28	Scepanovic et al.			
TD	9	6240541	2001-05-29	Yasuda et al.			
TD	10	6349403	2002-02-19	Dutta et al.			
TD	11	6366279	2002-02-04	Gorman	B1		

Same as IDS
filed 8-11-04
or 8-16-04

TD	12	6442745	2002-08-27	Arunachalam et al.	B1
TD	13	6505331	2003-01-07	Bracha et al.	B1
TD	14	6601227	2003-07-21	Trimberger	B1

US Published Applications

Note: Applicant is not required to submit a paper copy of cited US Published Applications

Init	Cite.No.	Pub. No.	Date	Applicant	Kind	Class	Subclass
TD	1	20030014725	2003-01-16	Sato et al.	A1		
TD	2	20040044979	2004-03-04	Aji et al.	A1		

Signature

Examiner Name	Date
<i>Umaranto</i>	10-18-04

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Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i> <div style="border: 1px solid black; border-radius: 50%; width: 100px; height: 100px; display: flex; align-items: center; justify-content: center; margin: 10px auto;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: 8px;">PATENT & TRADEMARK OFFICE</div> <div style="text-align: center;"> AUG 16 2004 </div> </div>				Complete if Known	
Application Number		09/731,891			
Filing Date		12/6/2000			
First Named Inventor		Steven Teig			
Group Art Unit		2825			
Examiner Name		Thuan Do			
Attorney Docket Number		SPLX.P0002			
Sheet	1	of	1		

FOREIGN PATENT DOCUMENTS							
Examiner Initials	Cite No. ¹	Foreign Patent Document		Date of Publication MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ²
		Office ³	Number ⁴ (if known) ⁵				
TD	1.	JP	02-262354	10-25-1990	Kuribayashi, Mototaka		

NON PATENT LITERATURE DOCUMENTS				
Examiner Initials	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.		T ²
TD	2.	CONG J. et al., DUNE - A Multilayer Gridless Routing System, May 2001, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, vol 20, iss. 5, pp. 633-647.		

Examiner Signature		Date Considered	10-18-04
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				Filing Date	12/6/00
				First Named Inventor	Steven Teig
				Group Art Unit	2825
				Examiner Name	Thuan V. Do
Sheet	1	of	7	Attorney Docket Number	SPLX.P0002

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	U.S. Patent Document Number Kind Code (if known)	Date of Publication MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
TD	1.	2001/0009031 A1	07-19-2001	Nitta et al.	
TD	2.	2002/0182844 A1	12-05-2002	Igarashi et al.	
TD	3.	2003/0005399 A1	01-02-2003	Igarashi et al.	
TD	4.	2003/0225205 A1	02-06-2003	Shively	
TD	5.	4,593,363	06-03-1986	Burstein et al.	
TD	6.	4,855,929	08-08-1989	Nakajima	
TD	7.	5,267,176	11-30-1993	Antreich et al.	
TD	8.	5,375,069	12-20-1994	Satoh et al.	
TD	9.	5,587,923	12-24-1996	Wang	
TD	10.	5,618,744	04-08-1997	Suzuki et al.	
TD	11.	5,633,479	05-27-1997	Hirano	
TD	12.	5,637,920	06-10-1997	Loo	
TD	13.	5,640,327	08-17-1997	Ting	
TD	14.	5,663,891	09-02-1997	Banji et al.	
TD	15.	5,757,089	05-26-1998	Ishizuka	
TD	16.	5,784,289	07-28-1998	Wang	
TD	17.	5,798,936	08-25-1998	Cheng	
TD	18.	5,838,583	11-17-1998	Varadarajan et al.	
TD	19.	5,889,677	03-30-1999	Yasuda et al.	
TD	20.	5,980,093	11-09-1999	Jones et al.	
TD	21.	6,070,108	05-30-2000	Andreev et al.	

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Examiner Signature	<i>Thuan V. Do</i>	Date Considered	2-18-04
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				First Named Inventor	Steven Teig
				Group Art Unit	2825
				Examiner Name	Thuan V. Do
Sheet	2	of	7	Attorney Docket Number	SPLX.P0002

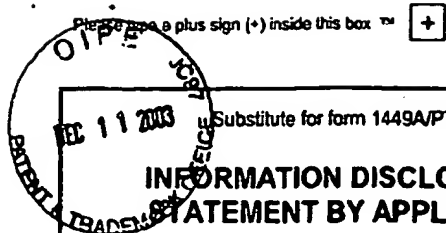
U.S. PATENT DOCUMENTS						
TD	22.	6,128,767		10-03-2000	Chapman	
TD	23.	6,209,123	B1	03-27-2001	Maziasz et al.	
TD	24.	6,253,363	B1	06-26-2001	Gasarov et al.	
TD	25.	6,295,634	B1	09-25-2001	Matsumoto	
TD	26.	6,324,674	B2	11-27-2001	Andreev et al.	
TD	27.	6,324,675	B1	11-27-2001	Dutta et al.	
TD	28.	6,327,693	B1	12-04-2001	Cheng et al.	
TD	29.	6,327,694	B1	12-04-2001	Kanazawa	
TD	30.	6,330,707	B1	12-11-2001	Shinomiya et al.	
TD	31.	6,378,121	B2	04-23-2002	Hiraga	
TD	32.	6,407,434	B1	06-18-2002	Rostoker et al.	
TD	33.	6,412,102	B1	06-25-2002	Andreev et al.	
TD	34.	6,415,422	B1	07-02-2002	Mehrotra et al.	
TD	35.	6,442,743	B1	08-27-2002	Sarrafzadeh et al.	
TD	36.	6,448,591	B1	09-10-2002	Juengling	
TD	37.	6,473,891	B1	10-29-2002	Shively	
TD	38.	6,480,991	B1	11-12-2002	Cho et al.	
TD	39.	6,490,713	B2	12-03-2002	Matsumoto	
TD	40.	6,519,751	B2	02-11-2003	Sriram et al.	
TD	41.	6,543,043	B1	04-01-2003	Wang et al.	
TD	42.	6,546,540	B1	04-08-2003	Igarashi et al.	
TD	43.	6,557,145	B2	04-29-2003	Boyle et al.	
TD	44.	6,567,967	B2	05-20-2003	Greidinger et al.	

Examiner Signature	<i>Munado</i>	Date Considered	2-18-04
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				Examiner Name	Thuan V. Do
Sheet	3	of	7	Attorney Docket Number	SPLX.P0002

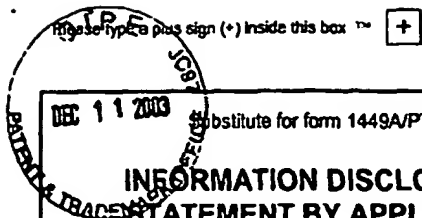
FOREIGN PATENT DOCUMENTS								
Examiner Initials	Cite No. ¹	Foreign Patent Document			Date of Publication MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ^a
		Office ³	Number ²	Kind Code (if known) ³				
TD	45.	JP	411296560	A	10-29-1999	Matsumoto et al.	with English translation of Abstract;	
TD	46.	JP	2000-82743	A	03-21-2000	Igarashi et al.	with Japanese Patent Office's English translation of Abstract; and with English translation of the application.	✓
TD	47.	JP	H03-173471	A	07-26-1991	Tawada et al.	with Japanese Patent Office's English translation of Abstract; and with English translation of the application.	✓
TD	48.	JP	H05-243379	A	09-21-1993	Masako Kubota	with Japanese Patent Office's English translation of Abstract; and with English translation of the application.	✓
TD	49.	JP	H05-102305	A	04-23-1993	Akihiro Sato	with Japanese Patent Office's English translation of Abstract; and with English translation of the application.	✓
TD	50.	JP	H07-86407	A	03-31-1995	Shinpei Miura	with Japanese Patent Office's English translation of Abstract;	✓

Examiner Signature	<i>Miura</i>	Date Considered	8-29-05
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				Group Art Unit	2825
				Examiner Name	Thuan V. Do
Sheet	4	of	7	Attorney Docket Number	SPLX.P0002

FOREIGN PATENT DOCUMENTS							
						and with English translation of the application.	
TD	51.	JP	H09-162279	A	06-20-1997	Masaaki Yoshida	with Japanese Patent Office's English translation of Abstract; and with English translation of the application. ✓

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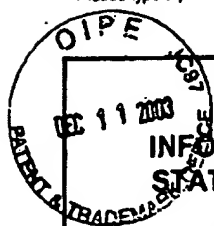
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Sheet	5	of	7	Attorney Docket Number	SPLX.P0002

NON PATENT LITERATURE DOCUMENTS				
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.		
TD	52.	Ahuja, R. et al., Faster Algorithms for the Shortest Path Problem, Journal of the Association for Computing Machinery, vol. 37, No. 2, April 1990, pp. 213-223.		
TD	53.	Brady, L. et al., Channel Routing on a 60° Grid, extended abstract, pp. 956-931.		
TD	54.	Brambilla, A. et al., Statistical Method for the Analysis of Interconnects Delay in Submicrometer Layouts, IEEE, 8/2001, pp. 957-966.		
TD	55.	Carothers, K., A Method of Measuring Nets Routability for MCM's General Area Routing Problems, 1999, pp. 186-192.		
TD	56.	Chen, H. et al., Physical Planning of On-Chip Interconnect Architectures, 2002, IEEE, International Conference, pp. 30-35.		
TD	57.	Cheng, K. et al., Manhattan or Non Manhattan? A Study of Alternative VLSI Routing Architectures, pp 47-52, 2000.		
TD	58.	Cheng, K., Steiner Problem in Octilinear Routing Model, a Thesis Submitted for the Degree of Master of Science, National University Singapore, 1995, pp. 1-122.		
TD	59.	Chip Model with Wiring Cost Map, August 1983, IBM Technical Disclosure Bulletin, vol. 26, iss. 3A, pp. 929-933.		
TD	60.	Cong, J. et al., Efficient Heuristics for the Minimum Shortest Path Steiner Arborance Problem with Applications to VLSI Physical Design, Cadence Design Systems and UCLA Computer Science Department, pp.88-95.		
TD	61.	Cong, J. et al., Performance-Driven Multi-Layer General Area Routing for PCB/MCM Designs, UCLA Computer Science Department, 1998, pp. 356-361.		
TD	62.	Enbody, R. et al., Near-Optimal n-Layer Channel Routing, 23 rd Design Automation Conference, 1986, pp. 708-714.		
TD	63.	Fang, S. et al., Constrained Via Minimization with Practical Considerations for Multi-Layer VLSI/PCB Routing Problems, 28 th ACM/IEEE Design Automation Conference, 1991, pp. 60-65.		
TD	64.	Hom, I. et al., Estimation of the Number of Routing Layers and Total Wirelength in a PCB Through Wiring Distribution Analysis, 1996, pp. 1-6.		

Examiner Signature	<i>Thuan V. Do</i>	Date Considered	8-29-05
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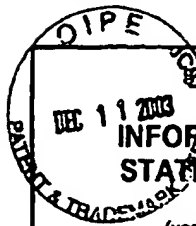
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				Examiner Name	Thuan V. Do
Sheet	6	of	7	Attorney Docket Number	SPLX.P0002

NON PATENT LITERATURE DOCUMENTS					
TD	65.	Hong, X. et al., Performance-Driven Steiner Tree Algorithms for Global Routing, 30 th ACM/IEEE Design Automation Conference, 1993, pp. 177-181.			
TD	66.	Jiang Hu et al.: "A Timing-Constrained algorithm for Simultaneous Global Routing of Multiple Nets" IEEE/ACM International Conference on Computer Aided Design. ICCAD - 2000. IEEE/ACM Digest of Technical Papers (CAT. NO.00CH37140), Proceedings of International Conference on Computer Aided Design (ICCAD), San Jose, CA USA, 5-9 Nov. 2000. Pages 99-103.			
TD	67.	Kastner R et al.: "Predictable Routing" IEEE/ACM International Conference on Computer Aided Design. ICCAD - 2000. IEEE/ACM Digest of Technical Papers (CAT. NO.00CH37140), Proceedings of International Conference on Computer Aided Design (ICCAD), San Jose, CA, USA, 5-9 Nov. 2000. Pages 110-113.			
TD	68.	Khoo, K. et al., An Efficient Multilayer MCM Router Based on Four-Via Routing, 30 th ACM/IEEE Design Automation Conference, 1993, pp. 590-595.			
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TD	71.	Lodi, E. et al., A Preliminary Study of a Diagonal Channel-Routing Model, Algorithmica, 1989, pp.585-597.			
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TD	73.	Naclerio, N. et al., Via Minimization for Gridless Layouts, 24 th ACM/IEEE Design Automation Conference, 1987, pp. 159-165.			
TD	74.	Nam, G. et al, Satisfiability-Based Layout Revisited: Detailed Routing of Complex FPGAs Via Search-Based Boolean SAT, 1999, pp. 167-175..			
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TD	77.	Phillips, N., Channel Routing by Constraint Logic, Department of Computer Science Southern Illinois University, ACM, 1992.			

Examiner Signature	<i>Amundo</i>	Date Considered	8-29-05
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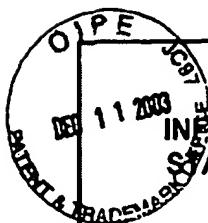
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Substitute for form 1449A/PTO				Application Number	09/731,891
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Filing Date	12/6/00
				First Named Inventor	Steven Teig
				Group Art Unit	2825
				Examiner Name	Thuan V. Do
Sheet	7	of	7	Attorney Docket Number	SPLX.P0002

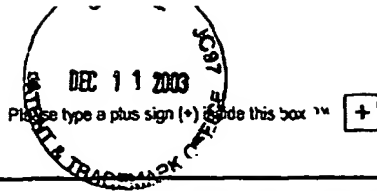
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TD	78.	Takashima, Y. et al, Routability of FPGAs with Extremal Switch-Block Structures, IEICE Trans. Fundamentals, vol. E81-A, No. 5, May 1998, pp. 850-856.
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TD	80.	Theune, D. et al., HERO: Hierarchical EMC-constrained routing, 11/1992, IEEE pp 468-472.
TD	81.	Tseng, H., Timing and Crosstalk Driven Area Routing, pp. 378-381.
TD	82.	Wang, D., Novel Routing Schemes for IC Layout, Part I: Two-Layer Channel Routing, 28 th ACM/IEEE Automation Conference, 1991, pp. 49-53.
TD	83.	Wang, M. et al., Modeling and Minimization of Routing Congestion, Jan. 2000, IEEE proceedings of ASP-DAC, Asia and South Pacific, pp. 185-190.
TD	84.	Wood, G. et al., FPGA Routing and Routability Estimation Via Boolean Satisfiability, Department of Electrical and Computer Engineering Carnegie Mellon University, Pittsburgh, PA, pp. 119-125.
TD	85.	Zhang, C.X. et al., Floorplan Design Using a Hierarchical Neural Learning Algorithm, IEEE, 6/1991, pp. 2060-2063.
TD	86.	Zhou, H. et al., An Optimal Algorithm for River Routing with Crosstalk Constraints, 1996.
TD	87.	Zhou, H. et al., Global Routing with Crosstalk Constraints, Department of Computer Sciences, University of Texas, 1998, pp. 374-377.
TD	88.	Zhou, H. et al., Optimal River Routing with Crosstalk Constraints, ACM Transactions on Design Automation of Electronic Systems, vol. 3, No. 3, July 1998, pp. 498-514.

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				Filing Date	12/6/00
				First Named Inventor	Steven Teig
				Group Art Unit	2825
				Examiner Name	Thuan V. Do
Sheet	1	of	4	Attorney Docket Number	SPLX.P0002

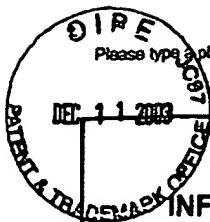
RELATED U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No. ¹	U.S. Patent Document	Date of Publication MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number			
TD	1.	2002/0100007	12-06-2000	Steven Teig et al.	Application regarding related placement technology.
TD	2.	2002/0073390 S/N 09/737,210	12-13-2000	Steven Teig et al.	Continuation of present application
TD	3.	Preliminary Amendment S/N 09/737,210	12-13-2000	Steven Teig et al.	This Preliminary Amendment is submitted as the publication 2002/0073390 does not accurately reflect the claims of S/N 09/737,210.
TD	4.	Preliminary Amendment S/N 09/737,220	12-13-2000	Steven Teig et al.	Continuation of present application
TD	5.	Preliminary Amendment S/N 09/737,245	12-13-2000	Steven Teig et al.	Continuation of present application
TD	6.	Preliminary Amendment S/N 09/739,460	12-15-2000	Steven Teig et al.	Continuation of 2002/0100007
TD	7.	2002/0124231 S/N 09/739,580	12-15-2000	Steven Teig et al.	Continuation of 2002/0100007
TD	8.	Preliminary Amendment S/N 09/739,580	12-15-2000	Steven Teig et al.	This Preliminary Amendment is submitted as the publication 2002/0124231 does not accurately reflect the claims of S/N 09/739,580.
TD	9.	Preliminary Amendment S/N 09/739,589	12-15-2000	Steven Teig et al.	Continuation of 2002/0100007
TD	10.	Preliminary Amendment S/N 09/742,171	12-19-2000	Steven Teig et al.	Continuation of 2002/0100007
TD	11.	6,651,233	11-18-2003	Teig et al.	Continuation of 2002/0100007
TD	12.	2002/0069397	01-13-2002	Steven Teig et al.	CIP of 2002/0100007

Examiner Signature	<i>W. Mando</i>	Date Considered	2/18/04
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				Filing Date	12/6/00
				First Named Inventor	Steven Teig
				Group Art Unit	2825
				Examiner Name	Thuan V. Do
Sheet	2	of	4	Attorney Docket Number	SPLX.P0002

RELATED U.S. PATENT DOCUMENTS					
TD	13.	2002/0170027	02-20-2002	Steven Teig et al.	CIP of 2002/0100007
TD	14.	2002/0157075	02-20-2002	Steven Teig et al.	CIP of 2002/0100007
TD	15.	2003/0088841 S/N 10/329,241	12-23-2002	Steven Teig et al.	CIP of present application
TD	16.	Preliminary Amendment S/N 10/329,241	12-23-2002	Steven Teig et al.	This Preliminary Amendment is submitted as the publication 2003/0088841 does not accurately reflect the claims of S/N 10/329,241.
TD	17.	2003/0018947	12-07-2001	Steven Teig et al.	Application regarding related routing technology
TD	18.	2002/0147958	10-19-2001	Steven Teig et al.	Application regarding related routing technology
TD	19.	2003/0079193	12-07-2001	Steven Teig et al.	Application regarding related routing technology
TD	20.	2003/0063614	01-04-2002	Steven Teig et al.	Application regarding related routing technology
TD	21.	2003/0064559	01-04-2002	Steven Teig et al.	Application regarding related routing technology
TD	22.	2003/0063568	01-04-2002	Steven Teig et al.	Application regarding related routing technology
TD	23.	2003/0101428 S/N 10/040,915	01-05-2002	Steven Teig et al.	Application regarding related routing technology
TD	24.	Preliminary Amendment S/N 10/040,915	01-05-2002	Steven Teig et al.	This Preliminary Amendment is submitted as the publication 2003/0101428 does not accurately reflect the claims of S/N 10/040,915.
TD	25.	2002/0166105 S/N 10/040,948	01-05-2002	Steven Teig et al.	Application regarding related routing technology
TD	26.	Preliminary Amendment S/N 10/040,948	01-05-2002	Steven Teig et al.	This Preliminary Amendment is submitted as the publication 2002/0166105 does not accurately reflect the claims of S/N 10/040,948.
TD	27.	2003/0043827	01-05-2002	Steven Teig et al.	Application regarding related routing

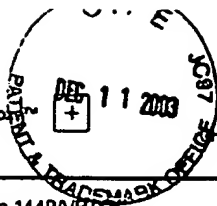
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				First Named Inventor	Steven Teig
				Group Art Unit	2825
				Examiner Name	Thuan V. Do
Sheet	3	of	4	Attorney Docket Number	SPLX.P0002

RELATED U.S. PATENT DOCUMENTS					
TD		S/N 10/040,953			technology
TD	28.	Preliminary Amendment S/N 10/040,953	01-05-2002	Steven Teig et al.	This Preliminary Amendment is submitted as the publication 2003/0043827 does not accurately reflect the claims of S/N 10/040,953.
TD	29.	2003/0023943 S/N 10/040,954	01-05-2002	Steven Teig et al.	Application regarding related routing technology
TD	30.	Preliminary Amendment S/N 10/040,954	01-05-2002	Steven Teig et al.	This Preliminary Amendment is submitted as the publication 2003/0023943 does not accurately reflect the claims of S/N 10/040,954.
TD	31.	2003/0066042 S/N 10/040,963	01-05-2002	Steven Teig et al.	Application regarding related routing technology
TD	32.	Preliminary Amendment S/N 10/040,963	01-05-2002	Steven Teig et al.	This Preliminary Amendment is submitted as the publication 2003/0066042 does not accurately reflect the claims of S/N 10/040,963.
TD	33.	2002/0174412 S/N 10/041,942	01-07-2002	Steven Teig et al.	Application regarding related routing technology
TD	34.	Preliminary Amendment S/N 10/041,942	01-07-2002	Steven Teig et al.	This Preliminary Amendment is submitted as the publication 2002/0174412 does not accurately reflect the claims of S/N 10/041,942.
TD	35.	2003/0088844 S/N 10/041,957	01-07-2002	Steven Teig et al.	Application regarding related routing technology
TD	36.	Preliminary Amendment S/N 10/041,957	01-07-2002	Steven Teig et al.	This Preliminary Amendment is submitted as the publication 2003/0088844 does not accurately reflect the claims of S/N 10/041,957.
TD	37.	2002/0199165 S/N 10/046,864	01-13-2002	Steven Teig et al.	Application regarding related routing technology
TD	38.	Preliminary Amendment S/N 10/046,864	01-13-2002	Steven Teig et al.	This Preliminary Amendment is submitted as the publication 2002/0199165 does not accurately reflect the claims of S/N

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				Group Art Unit	2825
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TD					10/046,864.
TD	39.	2003/0066043	01-13-2002	Steven Teig et al.	Application regarding related routing technology
TD	40.	2003/0115566	01-13-2002	Steven Teig	Application regarding related routing technology
TD	41.	2003/0056187 S/N 10/047,982	01-14-2002	Steven Teig et al.	Application regarding related routing technology
TD	42.	Preliminary Amendment S/N 10/047,982	01-14-2002	Steven Teig et al.	This Preliminary Amendment is submitted as the publication 2003/0056187 does not accurately reflect the claims of S/N 10/047,982.
TD	43.	2003/0066044	01-13-2002	Steven Teig et al.	Application regarding related routing technology
TD	44.	6,618,849	09-09-2003	Teig et al.	Application regarding related routing technology
TD	45.	2003/0088845 S/N 10/047,978	05-08-2002	Steven Teig et al.	Application regarding related routing technology
TD	46.	Preliminary Amendment S/N 10/047,978	05-08-2002	Steven Teig et al.	This Preliminary Amendment is submitted as the publication 2003/0088845 does not accurately reflect the claims of S/N 10/047,978.

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